FEDERAL - STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

Rio Grande Drainage Basin

By

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.

As of

MAR. 1, 1951

FEDERAL-STATE COOPERATIVE SNOW SURVEY AND IRRIGATION WATER SUPPLY FORECASTS

FOR

RIO GRANDE BASIN

Report Prepared

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WATER SUPPLY OUTLOOK
RIO GRANDE AND CANADIAN DRAINAGE BASINS
March 1, 1951

The water supply outlook for the Rio Grande and its tributaries is not favorable as of March 1. Snow cover along the Continental Divide is about 70 percent of normal. On the Sangre de Cristo range to the east of San Luis Valley the current snow cover is 50 percent of average. In northern New Mexico the snow fall has been extremely deficient with minimum snow measurements on most courses for any March 1 since surveys were started in 1937. Precipitation has been deficient and soil moisture conditions are poor throughout the valley.

RIO GRANDE

Snow accumulation along the Continental Divide west of San Luis Valley is about 70 percent of normal. About one-half of the present snow pack is a result of storms during the last four days of January. The snow on the Sangre de Cristo range is about 50 percent of normal. There is no snow on the valley floor. The soil is dry due to lack of precipitation during the past several months. Storage in irrigation reservoirs is about 15 percent of March 1, 1950 and much below the past average.

On the headwaters of the Rio Chama the snow cover is 60 percent of normal and about 75 percent of a year ago. Elsewhere in northern New Mexico the snow fall has been very deficient. In this area the current snow cover for this date is less than for any date since snow surveys were started in 1937. Soil moisture is described as dry in the middle Rio Grande area. Storage in El Vado Reservoir is now 5,000 acre-feet as compared to 92,000 last year on this date.

The combined storage in Elephant Butte and Caballo Reservoirs is now 459,000 acre-feet, about one-half of that stored on March 1, 1950. Soil moisture in the lower Rio Grande valley is reported as fair.

There is practically no snow on the headwaters of the Pecos near Santa Fe. Storage in the Carlsbad project reservoirs is over 100,000 acre-feet, slightly less than last year but well above the past ten year average.

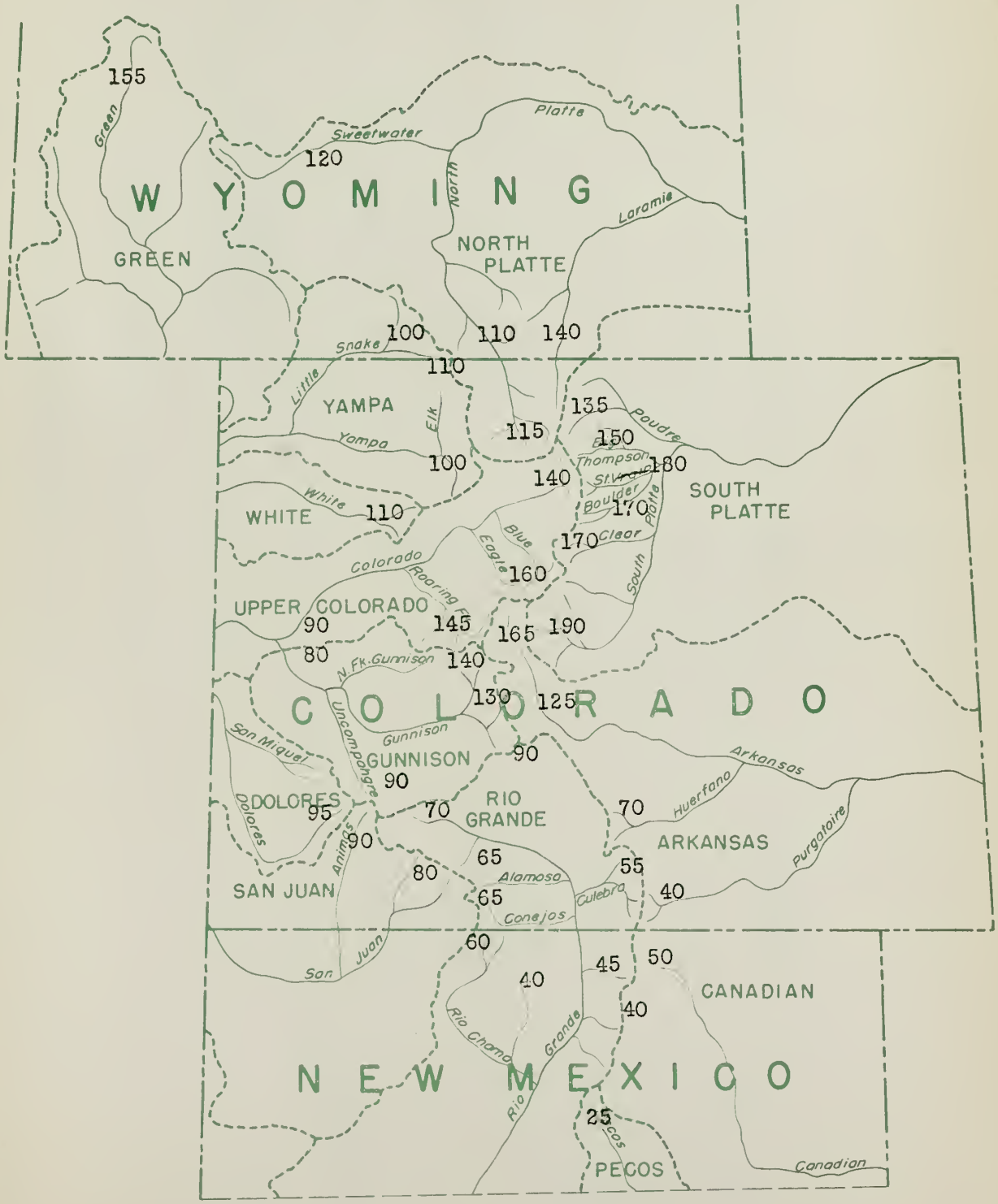
The general water supply outlook for the Rio Grande drainage is critically unfavorable at this time. A series of dry years has depleted reservoir storage and very little summer runoff may be expected from the current snow cover. An extreme curtailment of water use, especially in New Mexico, appears inevitable unless unusually heavy snow occurs during the remainder of the season.

CANADIAN DRAINAGE

There is very little snow on Canadian River tributaries. Soil moisture conditions are reported as fair in the Tucumcari project. Storage in Conchas reservoir is now 293,000 acre-feet as compared to 316,000 a year ago.

WATER CONTENT OF SNOW ON THE WATERSHEDS OF
PLATTE, ARKANSAS, UPPER COLORADO AND RIO GRANDE BASINS
BASED ON SNOW SURVEYS MADE APPROXIMATELY FIRST DAY OF MONTH

In Percent of Normal
March 1, 1951



SNOW SURVEYS AND IRRIGATION WATER FORECASTS
RIO GRANDE BASIN

STATUS OF RESERVOIR STORAGE, MARCH 1,1951

STREAM	RESERVOIR	USABLE CAPACITY 1000 A.F.	THOUSANDS OF ACRE FEET IN STORAGE About March 1 1951	1950	1949	1948	10-year Ave. 1941-1950
RIO GRANDE							
	Rio Grande	51.3	4.2	29.8	17.5	22.3	17.1
	Santa Maria	45.0	2.6	22.9	4.9	5.4	11.6
	Sanchez	103.0	3.4	12.8	5.4	8.6	14.0
	Terrace	17.7	1.4	7.1	1.7	5.6	3.6
	Continental	26.7	3.8	18.7	3.2	3.0	10.6
	Elephant Butte	2273.7	298.8	650.5	519.1	416.3	972.5
	Caballo	365.0	160.3	270.2	160.2	149.2	250.5
CHAMA RIVER							
	El Vado	226.0	5.0	92.0	101.0	7.3	63.2
CANADIAN RIVER							
	Conchas	600.0	293.7	316.0	309.2	353.1	325.8
PECOS RIVER							
	Alamogordo	148.0		100.0	30.4	32.4	63.0
	McMillan-Avalon	45.0		16.0	7.1	8.1	13.5

SNOW SURVEYS AND IRRIGATION WATER FORECASTS
for
RIO GRANDE BASIN
March 1, 1951

SUMMARY OF MARCH 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth			Water Content			Number Courses in Average	Snow Density			1951 Water Content in percent of	
	Eleven year Avg.*	1950	1951	Eleven year Avg.*	1950	1951		Eleven year Avg.	1950	1951	Eleven Year Avg.*	1950
	In.	In.	In.	In.	In.	In.		Percent	Percent	Percent		
Rio Grande (Colo.)	37.8	33.9	29.0	10.3	10.7	6.5	10	27	32	22	63	61
Upper Rio Grande	41.4	42.7	36.5	11.6	13.9	8.2	3	28	33	22	71	59
Alamosa River	42.7	43.0	33.8	11.0	12.8	6.8	2	26	30	20	62	53
Conejos River	45.8	41.3	34.5	13.3	13.7	8.7	2	29	33	25	65	64
Culebra River	34.7	24.0	22.4	9.2	7.7	4.2	1	26	32	19	46	55
Rio Grande (N.M.)	25.8	18.3	14.3	7.2	4.3	3.6	13	28	24	25	50	84
Chama River	38.0	31.7	23.9	11.4	8.9	6.6	5	30	28	28	58	74
Pecos River	18.4	11.6	6.3	4.8	3.3	1.1	3	26	28	17	23	33
Canadian River	22.3	14.7	14.1	6.1	3.1	3.9	4	27	21	28	64	126

*Some for shorter periods

PRECIPITATION DATA*

WATERSHED	STATE	Precipitation October 1 to February 28	Departure from Normal	Precipitation February	Departure from Normal
		Inches	Inches	Inches	Inches
Canadian	New Mexico	1.06	-2.25	0.10	-0.59
Rio Grande	Colorado	3.73	-3.44	0.80	-0.80
Rio Grande (N)	New Mexico	1.94	-2.57	0.59	-0.81
Rio Grande (S)	New Mexico	1.04	-1.80	0.18	-0.20
Pecos	New Mexico	1.68	-1.86	0.40	-0.22

*Average of Selected High Elevation Stations

RIO GRANDE DRAINAGE SNOW SURVEYS

March 1, 1951

Drainage Basin and Snow Course	Location: No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches): 1951	1950	1949	Past Record: Yrs. of Rec.	Av. Water Content (Inches)
RIO GRANDE IN COLORADO												
Wolf Creek Pass	26 Colo.	4	37N	2E	10000	2/28	71.5	18.3	31.0	35.4	14	23.7
Upper Rio Grande	27 "	13	40N	4W	9350	2/28	22.0	3.2	6.5	12.5	13	6.8
Silver Lakes	47 "	15	36N	5E	9600	2/1	17.9	2.6	7.0	11.4	14	5.4
River Springs	49 "	25	33N	6E	9300	2/28	20.8	4.1	8.2	4.0	14	6.8
LaVeta Pass #2	74 "	22	28S	70W	9300	3/2	19.0	4.6	4.9	8.6	13	7.2
Summitville	76 "	30	37N	4E	11500	3/2	49.6	11.0	18.6	26.0	11	16.6
Cumbres Pass #2	77 "	17	32N	5E	10000	2/28	48.2	13.2	19.2	24.9	14	19.7
Santa Maria	80 "	8	41N	2W	9700	2/28	16.1	3.1	4.3	8.3	12	4.3
Culebra	82 "		37.2N	105.2W	10000	3/2	22.4	4.2	7.7	9.8	11	9.2
Ft. Garland	84 "	13	29N	72W	8200	3/2	2.5	0.5	0.0	3.5	10	3.0
Platoro	108 "	22	36N	4W	9950	2/25	47.7	9.1	16.4	22.7	2	
West Conejos	109 "	25	35N	4E	9450	2/27	27.0	5.3	10.3	12.9	2	
La Manga	110 "	24	32N	5E	10100	2/27	52.4	13.4	19.5	26.2	2	
Pyramid	122 "	26	41N	5W	10300	--	--	--	6.8		1	
Spr. Creek Pass	123 "	2	42N	3W	10900	--	--	--	6.5		1	
Pool Table Mt.	124 "	19	41N	2E	10000	3/1	16.4	3.0	3.4	7.7	2	
Lake Humphreys	125 "	32	40N	1E	9300	3/1	23.2	5.1	5.5	11.2	2	
Cochetopa Pass	126 "	12	45N	3E	10000	2/28	21.5	4.4	2.6	6.8	2	
Howardville	151 "	15	41N	7E	9800	2/28	37.7	6.6	--	--	-	--
Red Mt. Pass	153 "	13	42N	8E	11000	2/28	81.2	23.9	--	--	-	--
Porcupine	154 "	2	41N	3W	10400	3/2	28.1	6.0				
Wolf Creek Summit	155 "	6	37N	2E	11000	2/28	64.2	15.2	--	--	-	--
			Average for drainage				29.0	6.5	10.7	14.4		10.3
UPPER RIO GRANDE												
Wolf Creek Pass	26 Colo.	4	37N	2E	10000	2/28	71.5	18.3	31.0	35.4	14	23.7
Upper Rio Grande	27 "	13	40N	4W	9350	2/28	22.0	3.2	6.5	12.5	13	6.8
Santa Maria	80 "	8	41N	2E	9700	2/28	16.0	3.0	4.3	8.3	12	4.3
Pyramid	122 "	26	41N	5W	10300	--	--	--	6.8	--	1	
Spr. Creek Pass	123 "	2	42N	3W	10900	--	--	--	6.5	--	1	
Pool Table Mt.	124 "	19	41N	2E	10000	3/1	16.4	3.0	3.4	--	1	
Lake Humphreys	125 "	32	40N	1E	9300	3/1	23.2	5.1	5.5	--	1	
			Average for drainage				36.5	8.2	13.9	18.7		11.6

RIO GRANDE DRAINAGE SNOW SURVEYS
March 1, 1951

Drainage Basin and Snow Course	Location: No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Cover Measurements: Snow Depth (Inches)	Water Content (Inches): 1951	1950	1949	Past Record: Yrs. of Rec.	Av. Water Content (Inches)
ALAMOSA RIVER												
Silver Lakes	47 Colo.	15	36N	5E	9600	3/1	17.9	2.6	7.0	11.4	14	5.4
Summitville	76 "	30	37N	4E	11500	3/2	49.6	11.0	18.6	26.0	11	16.6
	Average for drainage						33.8	6.8	12.8	18.7		11.0
CONEJOS RIVER												
River Springs	49 Colo.	25	33N	6E	9300	2/28	20.8	4.1	8.2	9.0	14	6.8
Cumbres Pass #2	77 "	17	32N	5E	10000	2/28	48.2	13.2	19.2	24.9	14	19.7
Platoro	108 "	22	36N	4W	9950	2/25	47.7	9.1	16.4	22.7	2	
West Conejos	109 "	25	35N	4E	9450	2/27	27.0	5.3	10.3	12.9	2	
La Manga	110 "	24	32N	5E	10100	2/27	52.4	13.4	19.5	26.2	2	
	Average for drainage						34.5	8.7	13.7	17.0		13.3
CULEBRA RIVER												
Culebra	82 Colo.		37.2N	105.2W	10000	3/2	22.4	4.2	7.7	9.8	11	9.2
RIO GRANDE IN NEW MEXICO												
CHAMA RIVER												
Cumbres Pass #2	77 Colo.	17	32N	5E	10000	2/28	48.2	13.2	19.2	24.9	14	19.7
Canjilon	6 N.M.	4	26N	6E	9500	3/1	18.9	6.1	—	13.3	13	13.9
Pay Role	15 "	16	28N	7E	9700	2/26	16.5	3.0	7.4	15.4	10	9.1
Chama Divide	17 "		36.9N	106.7W	7750	3/1	6.1	3.0	1.4	8.2	11	5.1
Chamita	18 "		36.9N	106.7W	8500	3/1	29.8	7.5	7.5	13.3	10	9.2
Bateman	29 "	5	26N	6E	9300	3/1	26.3	6.0	11.4	—	1	
	Average for drainage						23.9	6.6	8.9	15.5		11.4
PECOS RIVER												
Aspen Grove*	4 N.M.	8	28N	15E	9500	3/2	7.2	1.3	4.0	4.5	14	4.8
Panchuela	20 "	25	24N	16E	9200	2/28	5.4	1.0	1.2	4.6	14	3.6
Big Tesuque*	21 "	23	22N	13E	9000	3/1	6.2	1.1	4.8	7.6	9	5.9
Gallinas	25 "	22	22N	13E	10100	2/26	2.8	0.5	0.0	5.4	3	
	Average for drainage						6.3	1.1	3.3	5.6		4.8

*On adjacent drainage

RIO GRANDE DRAINAGE SNOW SURVEYS
March 1, 1951

Drainage Basin and Snow Course	Location: No. and State	Sec.	Twp.	Range	Elev.	Snow Cover Measurements: Date of Survey	Snow Depth (Inches)	Water Content (Inches) 1951	1950	1949	Past Record: Yrs. of Record	Av. Water Content (Inches)
RIO GRANDE IN NEW MEXICO												
Red River	1 N.M.	29	28N	15E	9500	2/27	19.2	2.3	5.9	8.0	14	7.9
Taos Canyon	2 "	10	25N	15E	9000	2/26	8.4	1.2	3.8	5.0	14	6.6
Aspen Grove	4 "	12	18N	10E	9100	3/2	7.2	1.3	4.0	4.5	14	4.8
Lee Ranch	5 "	3	18N	4E	9050	3/1	16.5	5.1	4.8	9.0	14	7.1
Canjilon	6 "	4	26N	6E	9500	3/1	18.9	6.1	--	13.3	13	13.9
Hematite Park*	9 "	8	28N	15E	9500	2/26	14.5	4.8	1.3	5.2	14	5.1
Tres Ritos	12 "	23	22N	13E	9000	3/1	9.3	3.6	3.6	6.0	13	6.0
Pay Role	15 "	16	28N	7E	9700	2/26	16.5	3.0	7.4	15.4	10	9.1
Chama Divide	17 "		36.9N	106.7W	7750	3/1	6.1	3.0	1.4	8.2	11	5.1
Chamita	18 "		36.9N	106.7W	8500	3/1	29.8	7.5	7.5	13.3	10	9.2
Cordova	19 "	22	22N	13E	10100	2/28	28.0	6.4	6.3	13.1	9	9.6
Panchuela #2	20 "	27	19N	12E	8300	2/28	5.4	1.0	1.2	4.6	14	3.6
Big Tesuque	21 "	17	18N	11E	10000	3/1	6.2	1.1	4.8	7.6	9	5.9
Elk Cabin	24 "	8	18N	11E	8250	3/3	0.0	0.0	0.0	5.2	3	
Rio En Medio	26 "	8	18N	11E	10400	3/1	14.0	2.9	5.5	--	1	
Quemazon	28 "	34	20N	5E	9500	2/27	24.6	5.0	5.0	--	1	
Bateman	29 "	5	26N	6E	9300	3/1	26.3	6.0	11.4	--	1	
Costilla	30 "	-	37.0N	105.5	10000							
		Average for drainage					14.3	3.6	4.3	8.3		7.2
CANADIAN RIVER												
Hematite Park	9 N.M.	8	28N	15E	9500	3/1	14.5	4.8	1.3	5.2	14	5.1
Ocate Mesa	10 "	25	24N	16E	9200	3/1	4.5	0.8	1.3	3.3	13	3.1
Tres Ritos*	12 "	23	22N	13E	9000	3/1	9.3	3.6	3.6	6.0	13	6.0
Cordova*	19 "	22	22N	13E	10100	2/28	28.0	6.4	6.3	13.1	9	9.6
		Average for drainage					14.1	3.9	3.1	6.9		6.1

*On adjacent drainage

Federal - State - Private

COOPERATIVE SNOW SURVEYS

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"WATER IS THE WEST'S GREATEST RESOURCE"